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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/885,456	06/19/2001	Kenneth J. Hines	10488/12:1	2742

7590 10/07/2004

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EXAMINER

YIGDALL, MICHAEL J

ART UNIT	PAPER NUMBER
2122	

DATE MAILED: 10/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	09/885,456	HINES, KENNETH J.
Examiner	Art Unit	
Michael J. Yigdall	2122	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 30 June 2004.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 12-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 12-29 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 30 June 2004 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
  1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>8/25/04, 10/8/01, 1/8/03</u> | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|   | 6) <input type="checkbox"/> Other: _____                                    |

## **DETAILED ACTION**

1. This Office action is in reply to Applicant's response and amendment filed on June 30, 2004. Claims 1-11 have been canceled. Claims 12-29 have been added and are now pending.
  
2. The present claims are new in scope. For example, the simulation features now recited in the claims were not previously claimed. It is noted that Applicant has not provided a statement regarding the absence of new matter nor identified support for the present limitations in the originally filed specification. Clarification is requested.

### ***Information Disclosure Statement***

3. The information disclosure statement (IDS) filed on August 25, 2004 has been considered. Copies of the information disclosure statements filed on October 8, 2001 and January 8, 2003, which were previously considered by the examiner, are included with this Office action per Applicant's request.

### ***Response to Arguments***

4. Applicant's arguments with respect to claims 1-11 have been considered but are moot in view of the new ground(s) of rejection.
  
5. Labatte is relied upon for the feature of storing event records in flash memory, and not for the step of simulating a distributed software environment at a debugging host (see Applicant's remarks, page 12, last paragraph). Likewise, Chen is relied upon for the feature of monitoring a bus trace with a probe.

***Claim Objections***

6. Claim 19 is objected to because of the following informalities: There is a repeated word "trace" at the end of the claim. Appropriate correction is required.

***Claim Rejections - 35 USC § 102***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 12-16, 18, 20-26, 28 and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Pat. No. 6,470,388 to Niemi et al. (art made of record; hereinafter "Niemi").

With respect to claim 12 (new), Niemi discloses a method comprising:

(a) instantiating a distributed software environment that includes two or more physical processing elements and a runtime debugging architecture (see FIG. 2 and column 5, lines 21-26, which shows a distributed software environment having two or more workstations, i.e. physical processing elements, and see FIG. 3 and column 6, lines 8-13, which shows elements of a runtime debugging architecture);

(b) executing first and second software programs in respective first and second physical processing elements within the distributed software environment (see column 6, lines 1-3, which shows executing first and second applications in the first and second workstations);

(c) generating event records during execution of the first and second software programs, in response to occurrences of events (see column 11, lines 1-9, which shows generating event records during execution in response to occurrences of events);

(d) receiving at least some of the event records at the runtime debugging architecture of the distributed software environment (see column 8, lines 21-35, which shows receiving the event records at the runtime debugging architecture); and

(e) forwarding at least some of the event records from the distributed software environment to a debugging host outside of the distributed software environment (see FIG. 2 and column 11, lines 30-38, which shows forwarding some of the event records to a centralized logging facility, i.e. a debugging host outside of the distributed software environment).

(f) providing a simulation of the distributed software environment at the debugging host, wherein the simulation includes state changes based at least in part on one or more of the event records received from the distributed software environment (see FIG. 6 and column 13, lines 44-50, which shows providing a representation or simulation of the distributed software environment at the centralized logging facility based on the event records).

With respect to claim 13 (new), Niemi further discloses the limitation wherein the operation of providing a simulation of the distributed software environment comprises simulating the distributed software environment at the debugging host substantially simultaneously with execution of the first and second software programs in the distributed software environment (see column 15, lines 38-48, which shows providing the simulation concurrently with execution of the applications).

With respect to claim 14 (new), Niemi further discloses:

- (a) collecting event records at a runtime system within the distributed software environment (see column 11, lines 1-9, which shows collecting event records at a runtime system within the distributed software environment);
- (b) forwarding event records from the runtime system to the runtime debugging architecture (see column 10, lines 15-18, which shows forwarding event records to the runtime debugging architecture); and
- (c) forwarding event records from the runtime debugging architecture to the debugging host along a communication channel (see column 10, lines 24-26 and column 11, lines 30-38, which shows forwarding event records to the centralized logging facility or debugging host along a communication channel).

With respect to claim 15 (new), Niemi further discloses the limitations wherein:

- (a) the runtime debugging architecture adds time stamps to event records (see column 12, lines 16-19, which shows adding time stamps to event records); and
- (b) the runtime debugging architecture adds causality stamps to event records, to identify causes of events associated with the event records (see column 12, lines 25-29, which shows adding causality stamps to event records to identify causes of events).

With respect to claim 16 (new), Niemi further discloses the limitation wherein the operation of forwarding event records to a debugging host comprises forwarding event records to the debugging host via an intermediate processing element (see column 12, lines 3-7, which shows forwarding event records by way of a logger or intermediate processing element).

With respect to claim 18 (new), Niemi further discloses the limitation wherein the operation of generating event records comprises generating an event record in response to at least one occurrence selected from the group consisting of:

- (a) an occurrence of an event selected for logging according to a predetermined design model associated with the software environment (see column 8, lines 21-35, which shows generating event records according to a predetermined design model such as user input from a user interface); and
- (b) execution of an explicit event recording call included in the software program (see column 10, lines 1-6, which shows generating event records upon execution of a debugging or event recording call included in the application).

With respect to claim 20 (new), Niemi further discloses:

- (a) transmitting an event token from the distributed software environment to the debugging host (see column 11, lines 53-65, which shows transmitting an encapsulated event message, i.e. an event token, from the distributed software environment to the centralized logging facility or debugging host);
- (b) expanding the event token at the debugging host, based at least in part on a predetermined sequence of events associated with the event token (see column 11, line 66 to column 12, line 3, which shows decapsulating or expanding the event token, and column 12, lines 7-9, which further shows extracting its information); and
- (c) simulating the distributed software environment, based at least in part on the predetermined sequence of events associated with the event token (see FIG. 6 and column 13,

lines 44-50, which shows simulating the distributed software environment based on the sequence of events from the event tokens).

With respect to claim 21 (new), Niemi further discloses the limitation wherein the operation of providing a simulation of the distributed software environment comprises tracking state changes within the simulated environment, based at least in part on event records received from the distributed software environment (see FIG. 6 and column 13, lines 24-40, which shows tracking state changes, such as changes in error, trace and audit states, based on the event records from the distributed software environment).

With respect to claim 22 (new), the features recited in the claim are analogous to the limitations recited in claim 12 (see the reasoning applied to claim 12 above).

With respect to claim 23 (new), the features recited in the claim are analogous to the limitations recited in claim 15 (see the reasoning applied to claim 15 above).

With respect to claim 24 (new), the features recited in the claim are analogous to the limitations recited in claims 12 and 14 (see the reasoning applied to claims 12 and 14 above). Niemi further discloses the limitation wherein the software programs, when executed, trigger events (see column 11, lines 19-23).

With respect to claim 25 (new), the features recited in the claim are analogous to the limitations recited in claim 15 (see the reasoning applied to claim 15 above).

With respect to claim 26 (new), the features recited in the claim are analogous to the limitations recited in claim 18 (see the reasoning applied to claim 18 above).

With respect to claim 28 (new), the features recited in the claim are analogous to the limitations recited in claims 12 and 21 (see the reasoning applied to claims 12 and 21 above).

With respect to claim 29 (new), the features recited in the claim are analogous to the limitations recited in claim 20 (see the reasoning applied to claim 20 above).

***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Niemi, as applied to claim 16 above, in view of U.S. Pat. No. 6,125,392 to Labatte et al. (art of record; herein “Labatte”).

With respect to claim 17 (new), although Niemi further discloses the limitation wherein the logger or intermediate processing element stores the event records in a file (see column 12, lines 7-9), Niemi does not expressly disclose the limitation wherein the operation of forwarding event records to the debugging host via an intermediate processing element comprises storing

one or more of the event records in a flash memory before forwarding the event records to the debugging host.

However, Labatte discloses storing an event log or event records in flash memory (see column 6, lines 42-44) in a manner that is further accessible by the computer's BIOS (see column 1, lines 13-18).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to supplement the system of Niemi with the feature of storing event records in flash memory, as taught by Labatte, for the purpose of providing a computer's BIOS with access to the same event records.

11. Claims 19 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Niemi, as applied to claims 12 and 24 above, respectively, in view of U.S. Pat. No. 5,642,478 to Chen et al. (art of record; herein "Chen").

With respect to claim 19 (new), although Niemi further discloses that the logging may be implemented in hardware (see column 6, lines 61-65), Niemi does not expressly disclose:

- (a) monitoring, with a probe, a bus trace associated with at least one of the physical processing elements; and
- (b) wherein the operation of generating event records comprises generating event records in response to activity detected on the bus trace.

However, Chen discloses a capture circuit or probe for monitoring bus traces (see column 8, lines 1-5) and generating event data or event records in response to activity on the bus traces

(see column 5, lines 41-56). This enables capturing all the event data necessary for debugging without having to recreate the problem (see column 5, line 65 to column 6, line 1).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to supplement the system of Niemi with the feature of monitoring activity on a bus trace with a probe and generating event records, as taught by Chen, in order to permit debugging without having to reproduce the bugs.

With respect to claim 27 (new), the features recited in the claim are analogous to the limitations recited in claim 19 (see the reasoning applied to claim 19 above).

***Conclusion***

12. The prior art made of record and not relied upon is considered pertinent to Applicant's disclosure. U.S. Pat. No. 6,718,294 to Bortfeld discloses a system and method for synchronized control of system simulators with multiple processor cores. U.S. Pat. No. 6,665,819 to Gopalan et al. discloses data capture and analysis for embedded systems. U.S. Pat. No. 5,999,728 to Cable discloses a method and apparatus for enhancing the portability of an object oriented interface among multiple platforms. U.S. Pat. No. 5,933,639 to Meier et al. discloses a system and method for debugging distributed programs.

13. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael J. Yigdall whose telephone number is (703) 305-0352. The examiner can normally be reached on Monday through Friday from 7:30am to 4:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tuan Q. Dam can be reached on (703) 305-4552. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

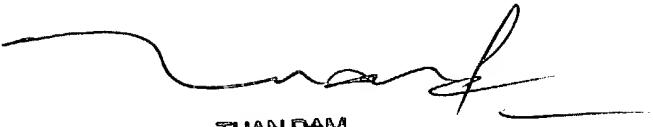
After October 25, 2004, the examiner can be reached at (571) 272-3707, and the examiner's supervisor, Tuan Q. Dam can be reached at (571) 272-3695.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MY

Michael J. Yigdall  
Examiner  
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SUPERVISORY PATENT EXAMINER